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Mallophaga of the Vizcacha.

By V. L. KELLOGG and S. NAKAYAMA, Stanford University, California.

(Plate VIII.)

The vizcacha (*Lagidium peruanum* Meyen) is a small, long-tailed, long-eared, soft-furred rodent of the Andes, with a head like a rabbit's and body like that of a giant mouse, a mouse as large as a small hare. It belongs with the chinchillas in the family Chinchillidae (or Lagostomidae) which comprises only four living species, confined to Chili, Bolivia, Peru and Argentina. It is, however, a well-represented family in the South American Tertiaries and Pleistocene, at least three-score species having been described from fossils collected all the way from Patagonia to Peru.

Only one ectoparasite has been heretofore recorded from the vizcacha, namely a species of *Gyropus* (Mallophaga) described by Gay in his *Fauna Chilensis* (about 1850), but

utterly unrecognizable from this description. The taking of two score specimens of Mallophaga last January and June (1913) by Dr. C. H. T. Townsend, government entomologist of Peru, from three vizcachas shot at Ninahuanchi, Peru (alt. 13,000 ft.), and one shot at Cerro Picuna, Peru (alt. 8,000 ft.), allows us to make some definite records of the ectoparasites of this interesting rodent.

The specimens from the vizcachas kindly sent us by Dr. Townsend represent several Mallophagan species, of which two, both new (in the face of the impossibility of recognizing Gay's vizcachan *Gyropus*) are undoubtedly peculiar to the vizcacha. For one of these species it is necessary to establish a new genus. In addition, the material, credited to the vizcacha, included two additional species, undoubtedly abnormal stragglers (in game bag or on the skinning table), one of them being the common *Lipeurus baculus* of doves, and the other a *Goniodes* which may have straggled either from doves or pheasants. Dr. Townsend writes us that his Indian collectors do frequently kill doves on their collecting trips, and that, despite his careful instructions, they may well allow their specimens to become too neighborly with each other in the game bag.

Of the two new species, one is a *Gyropus*, while the other, as said, plainly represents a new genus, a two-clawed form—the typical mammal-infesting Mallophaga are one-clawed—of a general appearance rather like that of *Menopon* or *Trinoton* (both bird-infesting genera). Although, as just suggested, most of the mammal-infesting Mallophaga are one-clawed species, belonging to the two genera *Gyropus* and *Trichodectes* (to this latter single genus belongs a considerable majority of all Mallophagan species so far recorded from mammals) a few two-clawed species, representing three of four genera, have been taken from mammals. Especially are these two-clawed species found on marsupials. Also, for almost each of these species a new genus has had to be established. These two special conditions of their occurrence give them a particular interest to students of Mallophaga.

The last genus to be established for the reception of one of these two-clawed mammal-infesting species is *Trimenopon*, containing the single species *T. echinoderma*, described by Bruce Cummings (Bull. Ent. Research, May, 1913) from specimens (males and females) taken from the wild guinea pig, *Cavia aperea* Erxleben, at Villa Rica, Paraguay, in November, 1910, F. Posner, coll. As our new species from the vizcacha, not assignable to any known genus, is also South American, and also resembles both *Menopon* and *Trinoton* in general habitus, and is also strongly spiny, our first thought was that it might be referable to Cummings' new form. But it is not at all possible to assign it thus. It is not only different in species but different in genus from *Trimenopon echinoderma*, despite some slight resemblance in superficialities. What is possible, and necessary, however, in the light of the establishment of the new genus *Trimenopon*, is to call attention to the fact that, if this genus is to be accepted as distinct from *Menopon*—and we do not suggest that it should not be—a species described by Kellogg and Paine in 1910 (Entomological News, vol. 21, pp. 461-462), under the name *Menopon jenningsi*, from specimens taken from the domestic guinea pig, *Cavia cobaya*, by Mr. A. H. Jennings, in the Canal Zone, Panama, must be assigned to this new genus. And, besides, there should be made a careful examination of the two species, to see if they are not identical. The descriptions and figures as given by the authors of the species are certainly much alike. The principal difference seems to be in the measurements, *echinoderma* being larger than *jenningsi* by one-third. If the two species are one, then their (its) name is *Trimenopon jenningsi*.

A special point of interest in connection with the two-clawed mammal-infesting Mallophaga is their obvious tendency, despite their otherwise plainly Amblyceran affinities, to have 5-segmented antennae, which is a prime characteristic of the other Mallophagan sub-order, the Ischnocera. The antennae of *Boopia*, *Heterodoxus*, *Latuncephalum* and, now, *Trimenopon*, are all described as 5-segmented, instead of 4-segmented,

as one would expect to find them. It is true, however, that there is a division of the third antennal segment into two segments in the case of several undoubted species of the large and rather heterogeneous genus *Menopon*, which is the old genus—old in point of priority of establishment by students of the group—to which the new genera are most nearly related. It should be added that it is not easy to determine accurately, or to interpret confidently, the exact condition of the antennae as regards number of segments. The suture dividing the third segment into two, thus increasing the number from four to five, may be so faint as to be capable, under different eyes, of seeming to be distinct enough to be accepted as actual suture, or of not being so accepted. In the case of the new genus which we have to establish for the reception of one of our new Mallophagan species from the vizcacha, we give four as the characteristic number of segments. Four is certainly the correct number for the type species of the genus. We have gone to much pains to ascertain this.

As a matter of fact the whole subject of the Mallophagan parasites of mammals, especially the subject of the two-clawed species, needs careful working over.

The description of the new species follows.

***Gyropus alpinus* n. sp. (Plate VIII.)**

A rather large species, unusually hairy, elongate, and belonging to that group of *Gyropus* species with fore legs and feet smaller than and different from the other two pairs. A pair of prominent laterally projecting lobes on the prothorax, well developed clinging pads on the femora of second and third legs, and the length and irregular arrangement (not in the usual one or two regular transverse rows) of the numerous long hairs on the dorsal surface of the abdomen, especially distinguish the species. General color pale yellowish brown, with thorax darker, and an incomplete darker line running sub-marginally around the head.

Male (Pl. VIII, *a*).—Length of head .29 mm., thorax .40 mm., abdomen 1.02 mm., total 1.71 mm.; width of head .37 mm., thorax .32 mm., abdomen .66 mm. *Female*.—Length of head .29 mm., thorax .43 mm., abdomen 1.25 mm.; width of head .36 mm., thorax .37 mm., abdomen .72 mm.

Head of both male and female wider than long with well expanded squarish temples, antennae (Pl. VIII, *b*) concealed in deep lateral fos-

sae (Pl. VIII, *h*), and numerous long, strong, spiny hairs, six arranged along the occipital border, two in each temple, four in a transverse series about even with the deepest part of the antennal fossae, and eight or ten others anterior to this line. On the other side are a few hairs of which two, one in each temporal region, are particularly long and conspicuous.

The thorax is long and slender, the effect of narrowness being heightened by the coloring which is paler in the lateral margins and angles. The prothorax has a salient blunt lateral projection on each side (Pl. VIII, *j*) and bears six spiny hairs on its dorsal surface. On each lateral process are two short, curved spine-hairs. The long pentagonal mesothorax has straight lateral margins and bears about a score of strong spiny hairs on its dorsum, including two on each lateral margin. In addition each lateral margin bears two short pointed spines. The short metathorax, plainly set off from the mesothorax by a suture, bears about thirty long spiny hairs on the dorsum, unevenly disposed in two transverse series. On the under side of each thoracic segment there are two series of long, spiny hairs, arranged in lines converging posteriorly so as to form a V.

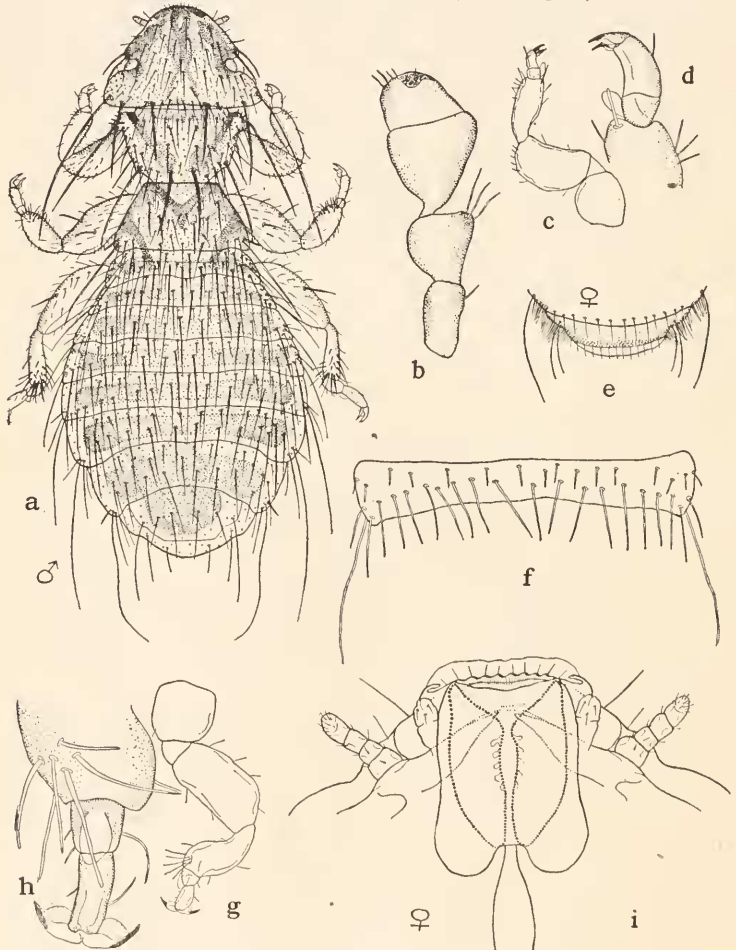
The fore legs are a little shorter than the middle and hind ones and markedly different in make-up. The femora have no clinging pads as have the second and third legs, the first tarsal segment has a strong thumb-like lateral process, and the second segment is not elongate and bears a normal claw (Pl. VIII, *d, e*). The femora of the second and third pairs of legs have a well-developed clinging pad on the side, the first tarsal segment is short, ring-like and inconspicuous, while the second is long, transversely striated and looks like a large, heavy, slightly bent claw (Pl. VIII, *f, g*). As a matter of fact the real claw is simply the slightly differentiated tip of this claw-like segment. (This condition of tarsal segment modified to be a claw-like and tarsal claw acting as its continuous tip is common to most Gyropi.)

Abdomen not quite twice as long as wide, and one-fifth shorter in the male than in the female, about $2\frac{1}{2}$ times as long as the thorax in the male, and three times as long in the female. Conspicuously covered above and below with long, spiny hairs, not evenly arranged in one or two transverse rows as in most Gyropi, but irregularly disposed, although approaching a rough arrangement in three rows (Pl. VIII, *k*). Posterior border without hooks or spines or other projecting processes, except a few conspicuous long hairs (Pl. VIII, *a* and *i*). Each segment with a long spiny hair in each postero-lateral angle. Male genitalia as shown in Pl. VIII, *c*.

Numerous males and females taken from a vizcacha, *Lagidium peruanum* Meyen, Ninahuanchi, Peru, 13,000 ft. altitude, C. H. T. Townsend, collector.

Genus **PHILANDESIA** nov.

A two-clawed genus, occurring on mammals, with four-segmented antennae and other general Amblycerous characters and outline of body. Head with distinct, narrow, and peculiar ocular emarginations. Mouth parts (Text-fig. *i*) of unusual

*Philandesia townsendi* n. sp., nov. gen.

a, male; *b*, antenna of male; *c*, front leg of male; *d*, tip of front leg of male, enlarged; *e*, last abdominal segment of female, ventral aspect; *f*, fourth abdominal segment of male, dorsal aspect showing disposition of hairs; *g*, middle leg of male; *h*, tip of middle leg of male, enlarged; *i*, ventral aspect of front part of head showing mouth parts.

type, the mandibles being long and slender and the other mouth parts together with the hypopharynx and pharyngeal skeleton forming a sort of grasping tube or furrow. The antennae are of the usual capitate Amblycerous type, but segment three is unusually narrow at base, and segment two unusually robust and subspherical in shape. Metathorax distinct although short; prothorax laterally expanded or "winged." Head and thorax with very long, strong, conspicuous spiny hairs, but with no short broad-based spines on the under side of the head as in *Menecanthus* (*Menophon*) or *Heterodorus*. Feet with small colorless broad flaps or pads extending outwards from the base of the claws. Male genitalia characteristic. The only species so far known is from South America (Peru); host, the vizcacha, *Lagidium peruanum* Meyen.

Philandesia townsendi sp. nov. (Text-fig.)

A Mallophagan species of medium size, the male being one and two-thirds, and the female being about two millimeters long. In both male and female the head is almost twice as wide as long, while the abdomen of the male is shorter and broader than that of the female. In general appearance it suggests a very spiny *Menophon* or *Trinoton* with long thorax and short abdomen. Striking features are the narrow, round-ended, ocular emarginations, the curious groove-like appearance of the mouth (Text-fig. i), and the small and delicate but distinct lateral flaps or pulvilli at the base of the claws.

Male (Text-fig. a).—Length of head .30 mm., thorax .35 mm., abdomen .98 mm., total 1.64 mm.; width of head .58 mm., thorax .58 mm., abdomen .86 mm. *Female*.—Length of head .36 mm., thorax .51 mm., abdomen 1.09 mm., total 1.96 mm.; width of head .59 mm., thorax .66 mm., abdomen .99 mm.

Head triangular with small but distinct ocular marginations which are narrow and with sub-parallel margins at the inner ends which are narrowly rounded. On the dorsal aspect a very spiny hair in each temporal angle projecting back almost to abdomen and four other long spiny hairs along the occipital margin. There are two strong spiny hairs in each lateral marginal angle just in front of the ocular emargination, and numerous shorter spine-hairs scattered over the dorsum of the head. On the ventral face there are even more long spiny hairs and numerous shorter ones. The antennae are four-segmented, no signs of a fifth segment (division of segment 3 by a transverse suture) being apparent. A single hair (sense-hair?) rises from the apical angle of segment 1, three longer hairs from the apical angle

of segment 2, and there are several sense hairs and a pronounced sense pit at the tip of segment 4 (Text-fig. *b*). Whole head pale translucent yellowish brown, which is the general color tone of the whole body. Spots of darker opaque brown indicate the special chitinization of mouth parts, etc.

Prothorax large, longer than the head and with conspicuous expanded lateral margins or wings, and covered all over with strong spiny hairs some of them, especially those of the lateral and posterior margins, very long. Ventral face also with long spiny hairs. Mesothorax smaller than prothorax, being little more than half as long, although quite as wide. (N. B.—In Text-fig. *a* the mesothorax is too long.) It is abundantly supplied with spine-hairs, a very long one arising from each postero-lateral angle. Metathorax distinctly set off from mesothorax by suture, but smaller and resembles an abdominal segment in general shape and appearance. Its numerous spine-hairs are disposed as those of the abdominal segments are. The general pale translucent yellowish brown of the thoracic segments is patterned by the showing through of the darker chitin rods of the ventral aspect and endoskeleton.

Legs (Text-figs. *c*, *d*, *h*, *g*) rather long and strong, and very spiny, especially the third pair. The distal ends of the tibiae of this pair are furnished with a conspicuous group of short stout spines, while a less conspicuous group occurs also on the ends of the second tibiae. The legs are concolorous with the body.

The abdomen of the male is broad and only a little longer than head and thorax combined. In the female the abdomen is less broad and is also longer, giving it a decidedly more slender appearance. The entire abdomen, both on dorsal and ventral aspects, is thickly beset with long spiny hairs, those rising from the lateral margins (especially of the hinder segments) being very long indeed. The hairs on the dorsal aspect are disposed in two transverse series, but rather irregularly. The hairs of the hinder series of the two are longer than those in the front one (Text-fig. *f*). Posterior margin of abdomen in both male and female simply and broadly rounded, that of the female (Text-fig. *e*) with numerous fine hairs in close series at the lateral margins, while that of the male has the strongly-chitinized, unusually shaped genitalia either projecting or, if retracted, showing through rather plainly. (Text-fig. *a*.)

Numerous males and females taken from a vizcacha, *Lagidium peruanum* Meyen, Ninahuanchi, Peru, 13,000 ft. altitude, C. H. T. Townsend, collector.

In addition, Dr. Townsend's sending includes a species of Anopluran, represented by one male and three females, evi-

dently all of one species, a species probably undescribed, of *Polyplax*. But all the specimens show some signs of immaturity, notably in the hair covering of the body; so that, although the five-segmented condition of the antennae indicates maturity, we prefer not to describe the species at present. Some mites, also, were included and are almost certainly new, but we shall not undertake their description.

Finally in addition to the ectoparasites from the vizcachas, Dr. Townsend has sent us some Mallophaga taken in Peru from other mammal and bird hosts. The specimens from mammals include the familiar *Trichodectes parumpilosus* from the horse, the curious *Menopon jenningsi*, described by Paine and myself in 1910 from the domestic guinea-pig, *Cavia cobaya*, and recorded by Paine again in 1912 from the wild guinea-pig, *Cavia cutleri*, of Peru, Dr. Townsend's specimens also coming from a domestic guinea-pig, and the interesting *Trichodectes breviceps* from the llama, described by Rudow in 1866, and not again recorded until now. Of chief interest, however, are two Mallophagan species taken from two specimens of the capuchin monkey, *Cebus capuchinus*. We are not as yet clear as to their status.

The specimens from the birds will not be referred to in this paper.

EXPLANATION OF PLATE VIII.

Gyropus alpinus n. sp.; *a*, male; *b*, antenna of male; *c*, genitalia of male; *d*, front leg of male; *e*, tip of front leg of male, enlarged; *f*, middle leg of male; *g*, tip of middle leg of male, enlarged; *h*, ventral aspect of part of the head of male, showing antenna in fossa; *i*, last abdominal segment of female; *j*, lateral margin of prothorax; *k*, fifth abdominal segment, dorsal aspect, showing disposition of hairs.

A Correction.

The *Proceedings* of the Second International Congress of Entomology held at Oxford, August, 1912, have appeared, dated Oxford, February, 1914. They form Volume I of the publications of this Congress, Volume II being the *Transactions* issued in October last. Owing to some error, the name of G. B. Cresson appears on pages 124 and 160 of the *Proceedings*, instead of that of E. T. Cresson, as having been elected an Honorary Member of the Congresses.